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A REVISION OF THE TRYPETIDÆ OF NORTHEASTERN AMERICA.

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This work was undertaken to provide keys for the identification of the species of Trypetidæ occurring in northeastern America. This region extends north to the Laurentian Mts., west to include Minnesota and south to embrace Kentucky and Virginia. The generic limits in this family are not well marked, and since no recent general keys are available, for our fauna, this revision may prove useful to entomologists.

For a clear discussion of the family characteristics, as well as for an explanation of technical terms, I refer the reader to Bezzi's recent paper on Indian Trypaneids (1914). Besides the new family name of Trypaneidæ proposed by Bezzi, both Euribiidæ and Tephritidæ have been suggested and used for this group. I prefer however, for the present, to use the old and familiar name of Trypetidæ.

The material used in this family has been largely that of the collection of Cornell University, and I take this occasion to thank the members of the department of Entomology for courtesies extended. I have also been greatly helped by loans of material and suggestions from several entomologists and welcome this opportunity, therefore, to thank J. M. Aldrich, E. T. Cresson, C. W. Johnson, S. J. Hunter, H. H. Severin, A. L. Melander, and R. C. Shannon.

In 1873 in the third volume of his Monograph, Loew included a key for the genera of North America. Later, Williston published one in his Manual of North American Diptera and still later Coquillett re-

vised Williston's key. Each of these, while superior to its predecessor, left much to be desired. In 1914 Hendel published a key to the genera of the world which gives a good working basis in the establishment of generic limits. It possesses advantages over the others but even here are found several weaknesses which prevents its use without some revision. The key which I present here is modified from that of Hendel so that it will fit the North American genera, at least so far as is possible with the eastern material at hand.

KEY TO THE GENERA.

A. Wings not reticulate but banded or brown-spotted or hyaline. If they are brown with larger white spots and marginal indentations so that doubt may arise, then there are also six scutellar bristles or the dorso-centrals are placed posterior to the anterior supra-alars and at the same time, the R_{4+5} vein is bristly.

B. Dorso-central bristles always placed behind the anterior supra-alars or wanting.

C. Scutellum with six or more marginal bristles. Front at least as broad as half the head. Cross-veins approximate. Wing markings consist of a few irregular brown spots. . . . **Xenochæta** Snow.

CC. Scutellum with two or four bristles.

D. Proboscis geniculate, as long as the head and thorax combined; anal cell closed by the convex vein Cu_2, thus being rounded out posteriorly; wing hyaline with incomplete cross-bands. . . . . **Aleomyia** new genus.

DD. Proboscis much shorter than the length of head.

E. Head inflated so that the vertex is rounded up between the eyes. Front twice as broad as one eye, and with a trough-like depression running lengthwise, the edges of which are provided with rod-like bristles in the male. **Straussia** R. D.

EE. Head not inflated and swollen at the vertex.

F. Vein M_{1+2} more or less bent up at the extreme tip; cell R_5 narrowed at the margin; ovipositor long and conical. . . . . **Anastrepha** Schiner.

FF. Vein M_{1+2} not bent up at the extreme tip.

G. Discal cell irregular in outline. Vein M_{1+2} is bent inward before the *r-m* cross-vein, thus jutting down into the discal cell . . . . . **Epochra** Loew.

GG. Discal cell normal; not as in the preceding.

H. Third joint of antenna with a sharp, awl-shaped point in front. . . . . **Zonosema** Lw.

HH. Third joint of antenna rounded in front. Wing with crossbands, rather than true rivulets.
Phorellia R. D.

BB. Dorso-central bristles in or in front of a line connecting the anterior pair of supra-alars.

C. Scutellum with six bristles; the basal cells R and M short, anal cell shorter than M (Compare preceding *C*). . . **Xenochæta** Snow.

CC. Scutellum with two bristles or occasionally four, but if four, then the picture of the wing is entirely dark shining brown with hyaline marginal indentations both on the anterior and posterior margins and two or three conspicuous round spots on the disc of the wing.

D. Scutellum with a median furrow, bifurcate. Crossbands dark brown. . . . . **Peronyma** Loew.

DD. Scutellum not bifurcate. When there are more than two scutellar bristles, the wing pattern is as described in *CC*.
Aciura R. D.

CCC. Scutellum with four bristles and with a wing pattern not as described in *CC*.

D. Vein R_{4+5} distinctly bristly from the base well along the vein.

E. Wing with four very oblique, yellow, brown-margined crossbands and with cross-veins approximate, oblique and nearly parallel. . . . . **Tomoplagia** Coq.

EE. Wing with dark brown markings differing from above. Small cross-vein perpendicular, but the posterior cross-vein oblique. Cross-veins approximate. The crossband over the *r-m* cross-vein is connected in the discal cell with the brown of the wing base. . . . . **Acidia** R. D.

DD. Vein R_{4+5} bare or nearly so.

E. Anal cell distally margined by a straight or convex Cu_2 so that R_5 is no drawn-out point. Cell R_5 not narrowed in the margin. Face produced snout-like with a median carina. Wing with four complete crossbands. Proboscis geniculate, as long as head. . . . . **Gonioglossum** Rond.

EE. Anal cell distally closed by the concave Cu_2 and drawn out into a point.

F. *R-m* cross-vein placed in the middle of the discal cell.

G. Scutellum swollen. Two pairs of very stout bristles on costa, one at humeral cross-vein and the other at the end of the subcostal vein. Subcosta suddenly bent up at right angles, before the apex, making the stigma very short. Third antennal joint rounded in front. . . . . **Stenopa** Loew.

GG. Scutellum not swollen. Third antennal joint usually

with a sharp point in front. Front as broad as one eye but longer than it is broad. .... **Rhagoletis** Loew.

FF. Cross-veins approximate, the *r-m* cross-vein placed distad of the middle of the discal cell.

G. Scutellum strongly arched, inflated and highly polished. Fly usually with a shiny black ground color but sometimes a shiny yellowish-brown.

Procecidochares Hend.

GG. Scutellum flattened above, not inflated, somewhat pointed posteriorly and but little shining.

H. Discal cell distinctly longer than the last segment of vein M_{1+2}. Picture of wing touching or covering the apex of this vein. .... **Terellia** R. D.

HH. Discal cell as long as the last segment of vein M_{1+2}. Picture of wing, if present, not touching the apex of this vein. .... **Neaspilota** O. S.

AA. Wing reticulate, or at least with reticular crossbands. The anterior dorso-central pair of bristles is always anterior to the first supra-alars, near to the transverse suture. Vein R_{4+5} either bare or bristly.

B. Wing very broad, more than half as wide as long; strongly convex margin.

C. Wing with proximal half, brown, reticulate and distal half with yellow rivulets or crossbands. ..... **Acrotænia** Lw.

CC. Wing reticulate throughout.

D. Wing dark brown with numerous but minute yellow dots and with the apex tipped by a narrow white crescent.

Eutreta Loew.

DD. Wing brown with numerous but conspicuous hyaline spots, almost equal amounts of the area dark and hyaline. Many rather small marginal spots. ..... **Xanthomyia** new genus.

BB. Wing of normal shape or else very long and narrow.

C. Face and cheeks and usually the front with black spots and flecks. Wing rayed at the margin and with eye-spots on the disc.

Paracantha Loew.

CC. Face and cheeks without black spots and flecks, at most a dark spot between the antenna and eye.

D. Front much broader than half the head, three or four times as broad as one eye.

E. Third antennal joint elongate with a sharp edge in front. Face retreating. ..... **Acidogona** Loew.

EE. Antennæ short, scarcely half as long as face, third joint rounded in front. Antennæ somewhat separate at base.

Eurosta Loew.

DD. Front narrower, at most twice as broad as one eye.

E. General color of body and wings is yellow, the latter being

a torn network of dark brown with yellow droplets. Apex and hind margin of wing is brown with only white spots. Often there is a black spot between the antenna and eye.
Icterica Lw.

EE. Wing with a brown to blackish network upon a hyaline or white ground or vice versa.

F. Apex of cell R_5 broadly and deeply hyaline, at most with a narrow brown border to the veins.

G. The dark reticulation extending over two thirds of the wing. Scutellum with four bristles. Abdomen comparatively heavy and robust, generally wider than the thorax and, as a rule, shorter, although sometimes in the female, the abdomen nearly equals it in length. ..... **Euaresta** Loew.

GG. The dark reticulation covering only a small portion of the area, not more than a third, and never extending into the costal cell. Scutellum has either two or four bristles, and the abdomen is more elongate, generally narrower and longer than the thorax.
Trypanea Schrank.

FF. Apex of cell R_5 not broadly and deeply hyaline, hence no stellate reticulation on the tip of the wing.

G. Proboscis greatly elongate, labellæ geniculate and equalling the head in length. Cheeks and genæ very narrow. Two or three lower fronto-orbitals. Mouth margin strongly projecting. Front averages longer than broad. ..... **Ensina** R. D.

GG. Proboscis of normal length, labellæ short or if somewhat elongate and geniculate, it is then shorter than the head. Vein R_{4+5} bare or indistinctly bristly.
Euribia Hend.

Genus **XENOCHÆTA** Snow. 1894.

Genotype, *Xenochæta dichromata* Snow.

Genus **ALEOMYIA** new genus.

Genotype, *Aleomyia alpha* new species.

This genus is quite distinct from others by reason of its elongate geniculated proboscis which if straightened out would measure at least the length of the head and thorax combined. The anterior pair of dorso-central bristles are placed far behind the line connecting the anterior supra-alars. The wing venation is likewise characteristic, the *r-m* cross-vein being placed before the middle of the discal cell and the anal cell being closed posteriorly by the convex Cu_2. The wing

pattern is made up of more or less isolated spots, or interrupted cross-bands. Its nearest relative is found in the genus Gonioglossum Rond., but the characters described above and particularly the length of the proboscis and the position of the dorso-central bristles will readily distinguish it.

Aleomyia alpha new species. Fig 1.

Clay-yellow with the tip of the ovipositor black, and in the male with the lateral edges of the abdomen of a dark brown color. Dorsum of thorax and front both with a glistening golden pollen and the whole body, with the exception of the head, everywhere covered with fine black hairs. Face projecting, snout-like; proboscis greatly elongated and geniculated. Antennæ short and covered with a shining silvery pollen. Front twice as broad as one eye, trough-like with the lateral edges raised. These ridges bear two pairs of stout black lower fronto-orbitals as well as a row of fine black hairs margining the eye. The scutellum is unicolorous, honey-yellow and bears four black bristles. Abdomen is densely clothed with black hairs. Ovipositor golden brown at base and black at the tip, the whole being at least four fifths as long as the abdomen; the proximal half is conical but there becomes suddenly constricted, leaving the distal section only half as wide as the proximal and hardly tapering towards the rather blunt end. The hyaline wings are of normal size and shape with several light-brown spots which tend to form more or less distinct bands, particularly in the male. One narrow, pale band crosses the wing in the vicinity of the humeral cross-vein; another elongated spot at distal end of cell M and anal cell; a third extends from the yellow stigma across the *r-m* cross-vein and the discal cell and for a short distance into cell Cu_1, being darkest in cell R_1 and at the point where it crosses the *r-m* cross-vein, and almost interrupted in cell R_3 and discal cells; another small spot bisects cell R_1, extending from the anterior margin to vein R_{2+3}; a fifth elongated spot extends across the wing in the region of the *m* cross-vein which it completely covers; in the male, this spot or line is widely interrupted in cell R_5 but continues from before the vein R_{4+5}, through cell R_3, over vein R_{2+3} and through cell R_1 to touch the anterior margin slightly before the tip of vein R_{2+3}. In the male this fifth band is more or less continuous from the anterior to the posterior margin of the wing. The sixth spot covers the apex of the wing, extending across the tip of cell R_5 and slightly into cell R_3 on one side and into cell $2dM_2$ on the other. Vein R_{4+5} is not bristly, the *r-m* cross-vein is before the middle of the discal cell and both cross-veins are perpendicular. The vein Cu_2 is convex. Female 5.5 mm., male 4.5 mm. Described from three males and six females taken on sunflower at Plummer's Island, Maryland, by R. C. Shannon on the 5th of August, 1913, and the 29th of August, 1915; by J. C. Crawford on the 14th of August, 1916.

Genus **STRAUSSIA** R. D. 1830.

Genotype, *Straussia longipennis* Wied.

The members of this genus are distinctly yellow with long bodies and rather remarkably shaped heads. The whole head is swollen, especially the occiput. The lateral borders of the front are raised so that the whole front assumes the appearance of a basin. The eyes are rounded and small. The scutellum is convex, clear yellow and bears four stout and long yellow bristles. The wings are comparatively long and hyaline with a yellow or brown rivulet pattern. The veins R_1 and R_{4+5} are distinctly bristly, while the *r-m* cross-vein is placed beyond the middle of the discal cell and the posterior angle of the anal cell is drawn out into a sharp point.

Straussia longipennis Wied.

The single species in the genus is quite variable. Loew has separated it into seven varieties and I am including a key compiled from his descriptions and the specimens before me. It is not a difficult problem to pick out individual specimens that perfectly fit his varieties, but it is quite impossible to place every specimen in one of his groups. There are so many intergradations that one can practically follow every variation of the wing pattern from one variety to another, while the extremes in the different directions seem to show distinct varieties.

I have quite a series of specimens, reared by the Cornell University Experiment Station from larvæ infesting the canes of sunflower. Their wing patterns indicate that they are intermediate between *var. typica* and *var. longitudinalis*. They differ from both these varieties, however, in the fact that the upper fronto-orbital bristles in the male are not incrassated and truncate. The upper fronto-orbital bristles of some, reared in the same lot, closely resemble those of *var. typica*.

Mr. H. H. Knight reared *S. longipennis* from larvæ in canes of Jerusalem Artichoke, the tubers of which were imported from Europe. These specimens were taken at Attica, N. Y.

KEY TO THE VARIETIES.

A. Of the four fronto-orbital bristles, the two upper ones are very much incrassated and truncate at the end in the male.

B. Thoracic dorsum shows, besides the anterior end of the middle stripe,

two well-marked black lateral stripes, interrupted at the transverse suture and pointed posteriorly. The wings of both male and female are very like var. *perfecta*. ..... **vittigera** Lw.

BB. Thoracic dorsum without lateral stripes.

C. Scutellum unicolorous. The picture of the wings is not deep in coloring. ..... **perfecta** Lw.

CC. Scutellum with dark corners.

D. Wing of male narrower than in all other varieties. Picture coalesces into a single broad longitudinal stripe, which is of a dirty clay-yellow color at the base and brown beyond. A spot in the costal cell is very dark in both sexes, the wing of the female otherwise being like var. *typica*. The band covering the *m* cross-vein extends to the margin. **longitudinalis** Lw.

DD. Wing picture is complete in female but not in the male. The band covering the *m* cross-vein does not reach the margin. In both sexes, the band over the vein M_{1+2} to the margin is broader. ..... **typica** Lw.

AA. The upper fronto-orbitals in the male end as usual in a point. They are not incrassated and not truncate at the tip.

B. The thoracic dorsum is without black lateral stripes. The scutellum has black corners and the metathorax has a black, elongated spot on either side. The last joint of all the feet is rather conspicuously infuscated on the sides and end. ..... **intermedia** Lw.

BB. The thoracic dorsum has black lateral stripes.

C. The picture is not interrupted on the anterior margin beyond the triangular hyaline spot near the stigma. The dark band, covering the *m* cross-vein, is interrupted, thus the hyaline band between the cross-veins is connected with the clear part of the cell R_5. **arculata** Lw.

CC. The oblique hyaline band between the cross-veins reaches the anterior margin as usual. The branch of the rivulet margining the apex of the wing and that which runs along the last section of the vein M_{1+2} coalesce in their middle. ..... **confluens** Lw.

Straussia longipennis var. **perfecta** Lw. Fig. 2.

Besides the specimens which I have from Pennsylvania, New York and Colorado, this variety has also been recorded from Kansas and Connecticut.

Straussia longipennis var. **typica** Lw. Fig. 3.

I have numerous specimens from Pennsylvania, New York, Connecticut, Maryland, North Carolina, Illinois, Quebec, Montana, and records from Kansas and California.

Straussia longipennis var. **longitudinalis** Lw. Fig. 4.

My material was taken in New York, Pennsylvania and North Carolina, but it is also reported from Connecticut and Colorado.

Straussia longipennis var. **vittigera** Lw. Fig. 5.

I have specimens from Illinois and Montana with records from Nebraska, Kansas and California.

Straussia longipennis var. **intermedia** Lw. Fig. 6.

I have only a single specimen from Ithaca, N. Y.

Straussia longipennis var. **confluens** Lw.

Loew records this variety from Connecticut.

Straussia longipennis var. **arculata** Lw. Fig. 7.

My specimens are from Montana and Colorado while it is reported from Illinois.

Genus **ANASTREPHA** Schiner. 1868.

Genotype, *Anastrepha serpentina* Wied.

Genus **ZONOSEMA** Lw. 1873.

(= *Spilographa* Loew 1873.)

Genotype, *Zonosema meigeni* Lw.

The representatives of this genus are yellow with hyaline wings that are banded with brown. The scutellum has four black bristles. They are close relatives of the genus *Phorellia,* but differ in the shape of the antennæ, the third joint of which has a sharp awl-shaped point on the front in *Zonosema.* In our eastern species, there is also a small, comma-like crossband between the two larger bands which cover the cross-veins. This small band extends from the anterior margin, through cell R_1 and across vein R_{2+3} into cell R_2. The anterior pair of dorso-central bristles is noticeably behind the anterior pair of supra-alars, whereas in *Phorellia,* they are practically in a line with them.

KEY TO THE SPECIES.

A. The *r-m* cross-vein is placed in the middle of the discal cell; and is perpendicular. There are four lower fronto-orbitals. The yellow scutellum has a black spot on either lateral corner and the yellowish-brown thorax has bright yellow stripes on the dorsal and lateral surfaces. The last segment of the abdomen bears a black spot on each side. Vein

R_{4+5} is bristly from the base distally to the region above the *m* cross-vein. ..... **electa** Lw.

AA. The *r-m* cross-vein is placed before the middle of the discal cell. There are three lower fronto-orbitals and the scutellum is unicolorous.

B. Vein R_{4+5} is distinctly bristly. The anterior pair of dorso-central bristles is comparatively nearer the cephalic end than in *setosa;* if a line connecting the anterior pair of dorso-centrals were extended at the sides between the two supra-alars nearest the dorso-centrals, this line would more nearly approach the anterior pair than the posterior. The crossband which covers the *r-m* cross-vein is very indistinct, almost interrupted, in the discal cell. **flavonotata** Macq.

BB. Vein R_{4+5} is not bristly, at most with only a couple at the extreme base and one further distad in the vicinity of the *r-m* cross-vein. The line connecting the anterior pair of dorso-centrals, if extended laterally, would pass midway between the anterior supra-alar and the one directly caudad. There is no interruption of the crossband in the discal cell. ..... **setosa** Doane.

Zonosema electa Say. Fig. 8.

My specimens are from North Carolina and Maryland, but it is also reported from Florida, Georgia, Tennessee, Kansas, Indiana, Connecticut. The larvæ live in the berries of *Solanum carolinense*. The wing of a variant from Texas is shown in figure 66.

Zonosema flavonotata Macq. Fig. 9.

= *Zonosema basiolum* O. S.

I have specimens from New York and Massachusetts and a record from Maryland.

Zonosema setosa Doane. Fig. 10.

I have only a single specimen from Washington but records from Idaho, South Dakota, Michigan and Minnesota.

Genus **ACIDIA** R. D. 1830.

The general color is yellow or light brown and our eastern species, at least, have minute black or dark brown punctures in various places on the body. They are seen on the front and vertex, upon the dorsum of the thorax and abdomen and upon the scutellum. They are often wanting in some of these regions but never in all at one time. The third antennal joint is rounded in front. The anterior pair of dorso-centrals is about in a line with the anterior supra-alars. The yellow scutellum has four black bristles. The wings are hyaline with light brown rivulets, vein R_{4+5} being bristly.

KEY TO THE SPECIES.

A. The cross-veins are approximate. The punctures on the body are black, and the wing has a rather complicated rivulet pattern as in the figure. **fratria** Lw.

AA. The *r-m* cross-vein is placed in the middle of the discal cell. The punctures are brown and the wing has a dark-brown S-shaped rivulet. **sigma** new species.

Acidia fratria Lw. Fig. 11.

My specimens are from District of Columbia, New York and California and it is reported from Washington, New Hampshire, New Jersey and Missouri. The larvæ mine in the leaves of parsnip.

Acidia sigma new species. Fig. 12.

Clay-yellow with numerous dark brown spots on the head, dorsum of thorax and abdomen and on the scutellum. The bristles of the head are stout and black while the antennæ are yellow with the arista darker at the tip. The dorsum of the thorax is shining yellowish-brown with many small black hairs. The anterior dorso-central bristles are in a line with the anterior supra-alars and the scutellum has four black bristles. The abdomen is densely covered with black punctures with a black hair in each, while the ovipositor is golden brown, conical, about as long as the last two segments taken together. The legs are yellow and the wings hyaline with a brown rivulet pattern. Vein R_{4+5} is bristly as far as the *r-m* cross-vein. The cross-veins are approximate, the *r-m* perpendicular, the *m* cross-vein oblique. Base of the wing is somewhat yellowish and the brown rivulet forms a complete S on the distal half. One end of the S fills the stigma and crosses the *r-m* cross-vein to the posterior margin, there turning back to cover the *m* cross-vein and reaching the anterior margin slightly beyond the middle of cell R_1 and from there following around the tip of the wing as an apical band as far as the tip of cell $2dM_2$.

Two female specimens, collected by R. C. Shannon, Plummer's Island, Maryland, June 20, 1916. Length 5.5 mm. The holotype is placed in the collection of the United States National Museum, the paratype in that of Cornell University.

Genus **GONIOGLOSSUM** Rond.

Genotype, *Gonioglossum wiedemanni* Meig.

Genus **PHORELLIA** R. D. 1830.

(= *Spilographa* Lw.)

Genotype, *Phorellia artemisiæ* Fabr.

This genus differs from *Zonosema* in having no sharp awl-shaped point on the front of the third joint of the antenna, although this joint may be more or less tapering towards its end. There is no small cross-

band between the bands that cover the cross-veins. The anterior pair of dorso-central bristles is in a line with the anterior supra-alars.

Phorellia tortilis Coq. Fig. 13.

This is a pale-yellowish species which has three lower orbitals. The small cross-vein is in the middle of the discal cell and vein R_{4+5} is very sparingly bristly.

A single specimen loaned me by C. W. Johnson was taken at Bretton Woods, N. H., but it is also reported from Washington.

Genus **PERONYMA** Lw. 1873.

Genotype, *Peronyma sarcinata* Lw.

Peronyma sarcinata Lw. Fig. 14.

The species differs very materially from any others in this region. The flies are reddish-brown and always dark in general color. The scutellum is unique, being shining black, swollen and bifurcate. Each division thus made bears a single stout black bristle and, contrary to Mr. Loew's opinion, I can discover no trace of the existence of another smaller pair. The wings are rather long and heavy, being hyaline with broad, dark-brown oblique bands, the second of which covers both cross-veins. The cross-veins are oblique and approximate. The discal cell is peculiarly shaped, wide and rounded distally and considerably tapered at the proximal end.

One specimen from Alabama was loaned by R. C. Shannon and it is also reported from South Carolina. I thought it well to include this species in my study as the genus is so distinct and because its range is close to our limits.

Genus **ACIURA** R. D. 1830.

There seems to be even more confusion in this than in other genera of this family. Hendel adopts three genera of this group, *Aciura, Xanthaciura* and *Tetraciura*. Our eastern species that have four scutellar bristles and an anal cell that is drawn out posteriorly will fit into none of these. Our species seem to possess some of the characteristics of each of Hendel's genera and therefore it would be much simpler and bring the species together in truer relationship if we used the one old genus *Aciura*. The others would then fall into line as subgenera and the puzzle of where to place our species be solved by the erection of a new subgenus.

The chief characteristic of the genus *Aciura* would then be its peculiar wing pattern. It is shining black without any clear or yellow punctures. There are, however, upon both the anterior and posterior sides, triangular marginal indentations and one to three clear round spots on the disc.

Trypeta nigriventris Macq. was described from material recorded from Baltimore. It doubtless belongs to the genus *Aciura*.

KEY TO THE SUBGENERA.

A. Two bristles on the scutellum.
  B. Postocular cilia black or dark. ..... **Aciura** Hend.
  BB. Postocular cilia yellow. ..... **Xanthaciura** Hend.
AA. Four bristles on the scutellum.
  B. Anal cell distally margined by a straight or convex Cu_2 so that there is no drawn-out point. ..... **Tetraciura** Hend.
  BB. Anal cell margined by a concave Cu_2 so that the cell is drawn out into a distinct point. ..... **Eucosmoptera** new subgenus.

KEY TO THE SPECIES OF THE SUBGENUS EUCOSMOPTERA.

A. Vein R_{4+5} bristly. Front broad, with the lateral borders raised, which in the male bear three large black spines and two bristles. The postocular bristles are black. The body is wholly reddish-yellow with the exception of the abdomen. This is entirely shining black in the male, while the extreme tip and the ovipositor are black in the female. The wings are broad, the *m* cross-vein perpendicular. ..... **nigricornis** Doane.
AA. Vein R_{4+5} not bristly.
  B. The *m* cross-vein is very oblique and the wing broad. The disc has a single hyaline spot which is situated in the discal cell and crosses vein Cu_1 so that it slightly enters cell Cu_1. The body is reddish-yellow and polished. ..... **limata** Coq.
  BB. The *m* cross-vein is perpendicular, and the wing comparatively long and narrow, with three spots on the disc. The thorax and the tip of the abdomen are black, the rest of the body being reddish-yellow, while the whole is shining where not covered with grey pollen. **tetraspina** new species.

Aciura (*Eucosmoptera*) **nigricornis** Doane. Fig. 15.

In the original description Mr. Doane mentions that there are only two strong bristles on the scutellum. He further states that the abdomen is missing. I have two specimens, a male and a female, both from New York, each of which has four prominent scutellar bristles. Mr. R. C. Shannon examined the material in the United States National Museum, three specimens from Massachusetts and New Hamp-

shire, and reports four scutellar bristles on these specimens. These facts lead me to believe that one pair of the bristles had been broken from the type specimen along with its abdomen. It is reported from Pennsylvania and Vermont.

Aciura (*Eucosmoptera*) **limata** Coq. Fig. 17.

The wing figure of this species was drawn by Mr. M. E. Phillips from the specimen in the U. S. National Museum. It has been reported only from Massachusetts.

Aciura (*Eucosmoptera*) **tetraspina** new species. Fig. 16.

Front golden yellow, only two thirds as wide as one eye. Bristles of head dark brown or black, occipital row quite heavy and white and another row of much smaller white pile margining the eye on the front. Antennæ honey-yellow, arista brown. Face pale yellow, somewhat retreating. Thorax grey-pollinose, densely covered with white stubble-shaped pile and long yellow bristles. Scutellum also grey-pollinose with four yellow bristles, the pair near the lateral corners being very long, at least three times as long as the central pair. The proximal half of the abdomen and the feet are shining brownish-yellow, and with the shining black distal half of the abdomen are covered with yellowish-brown hairs. The wing closely resembles that of *T. insecta* Lw., figured by van der Wulp. The pattern shows a shining longitudinal black band running the length of the wing with two hyaline indentations through the costal cell, and two larger ones in cell R_1 beyond the stigma. Cell $2dM_2$, likewise, has two deep hyaline indentations and proximad of this, the edge of the dark band follows approximately vein Cu_1. The edge is wavy with four points of dark jutting down into the hyaline. The disc of the wing bears three round hyaline spots, two in cell R_5, one before and one after the *m* cross-vein, and the third in cell R. Vein R_{4+5} is bare. Male 2.5 mm., female 3.5 mm.

Described from two males and three females collected by C. R. Crosby in Columbia, Mo., 26 May–8 June, 1906.

Genus **TOMOPLAGIA** Coq. 1910.

(= *Plagiotoma* Lw. 1873.)

Genotype, *Tomoplagia obliqua* Say.

The chief characteristics of this genus are found in its four-bristled scutellum and in the peculiarities of the wing. The latter are rather large with a distinctly convex anterior margin. The cross-veins are oblique and approximate. Vein M_{1+2} is bowed up beyond the *m* cross-vein. Vein R_{4+5} is very conspicuously bristly from the base well beyond the *m* cross-vein. The picture of the wing consists of four very oblique cross bands, the second of which covers both cross-veins.

Tomoplagia obliqua Say. Fig. 18.

Specimens from California and Arizona, but it is recorded from Pennsylvania, Indiana, Illinois, Iowa, New Jersey, Texas and Kansas. The adults were taken on *Vernonia* in August by Osten Sacken.

Genus **EPOCHRA** Lw. 1873.

Genotype, *Epochra canadensis* Lw.

This genus has much in common with *Acidia* and, like it, has the dorso-central bristles placed behind the anterior supra-alars. The flies have the same general color, yellow or pale brown, but lack the dark punctures. The yellow scutellum has four bristles. The hyaline wing could scarcely be considered as rivuleted, although it is indicative of that pattern. Vein R_{4+5} is bristly and vein M_{1+2} has a peculiar bend before the *r-m* cross-vein which causes it to project down into the discal cell. The dark band which covers the *m* cross-vein is not connected with the brown of the wing base.

Epochra canadensis Lw. Fig. 23.

My specimens are from Lorenzo, Cal., and Orono, Maine, but it has also been taken in Canada, Washington, Colorado and British Columbia. The larvæ feed in berries of currants and gooseberries.

Genus **STENOPA** Lw. 1873.

Genotype, *Stenopa vulnerata* Lw.

Stenopa vulnerata Lw. Fig. 20.

This is a black fly covered with grey almost stubble-shaped pile. The shining black scutellum is swollen and bears four black bristles. The wing is hyaline, large and broad with black rivulets. Vein R_{4+5} is bare and is bent down toward its apex so that the margin of cell R_5 is narrowed. The stigma is likewise peculiar, being as deep as long, on account of a sudden turning up of vein R_1. The presence of two pairs of heavy costal spines seems to be unique. These are situated, one at the humeral cross-vein and the other at the end of the subcostal vein.

The specimens are from Nance, North Carolina, but it is reported from Massachusetts, Connecticut and Tennessee.

Genus **RHAGOLETIS** Lw. 1862.

Genotype, *Rhagoletis cerasi* Linn.

Most of the species in this genus have black bodies and hyaline, black-banded wings. *R. suavis* Lw. is an exception, however, and has a yellow head, thorax and feet, but with a dark-brown abdomen. The wings are of the same general plan, hyaline with dark-brown bands or rivulets. The front is as broad as one eye, but longer than broad in all species. The third joint of the antenna usually has a point in front. The four-bristled scutellum is either whitish yellow or has a conspicuous yellow spot. Vein R_{4+5} of the wing is bare, or with two or three minute bristles at the base. The *r-m* cross-vein is in the middle of the discal cell.

KEY TO THE SPECIES.

A. Wings with a hyaline band extending completely across between the two cross-veins.

B. A clear hyaline band extending across the wing from the costal cell over the distal end of basal cell M.

C. The last two of the four bands is connected in the shape of an inverted V, the last margining the apex of the wing to beyond the tip of M_{1+2}, except for the presence of a minute hyaline crescent on the extreme edge for a part of the distance. The picture of the thoracic dorsum differs from *R. tabellaria*. It is mostly covered with grey pollen, so that the intervening shining black stripes are very narrow. The scutellum differs from *R. cingulata*. In the present species it is shining black with only a clear white spot on dorsum. ..... **juniperinus** Marc.

CC. The apex of the wing has a black spot which is generally separated from the last crossband although sometimes it is connected between the veins R_{2+3} and R_{4+5}. The scutellum is almost wholly yellow, the black appearing only as dark lateral corners.
cingulata Lw.

BB. The first two bands of the wing are connected on the posterior margin, the last two on the anterior margin, thus giving the wing the appearance of having a V and an inverted V. The picture of the thoracic dorsum is composed of four rather narrow stripes covered with grey pollen. All four stripes are short, the two central ones being only half the length of the thorax and the lateral, which are widely interrupted at the suture, even shorter. The intervening black spaces are about the same width as the stripes.
tabellaria Fitch.

AA. Wings without a clear hyaline band extending from the anterior to the posterior margin, between the cross-veins.

B. A separate branch, coming off from the main rivulet pattern, covers the *m* cross-vein.

C. The wing is without an apical hyaline crescent. There is a deep marginal triangle beyond the stigma which extends below vein R_{4+5}, and a clear, hyaline band running across the wing from the costal cell over the apex of basal cell M. The body is yellow with a brown abdomen. ..... **suavis** Lw.

CC. The wing has an apical hyaline crescent. Instead of a hyaline triangle beyond the stigma, there is one beginning in the costal cell, whose apex extends down into the base of cell Cu_1 **pomonella** Walsh.

BB. A separate branch comes off from the main rivulet pattern in the posterior apical region but does not cover the *m* cross-vein.

C. There is a conspicuous round "shot-hole" in the black of the discal cell. A hyaline triangle beyond the stigma extends down into cell R_5, and the two hyaline indentations on the posterior margin of the apical end extend well up into the wing. The proximal indentation crosses vein M_{1+2} and juts up into cell R_5, and the distal one margins the wing below vein M_{1+2} and goes back across cell R_5 into cell R_3. ..... **fausta** O. S.

CC. The wing is without a "shot-hole" in the black of the discal cell. The hyaline triangle beyond the stigma is produced toward the posterior margin between the cross-veins and well into cell Cu_1. The proximal indentation on the posterior margin occupies about half of cell $2dM_2$ without crossing vein M_{1+2}. The distal indentation margins the wing below vein M_{1+2} and curves up into cell R_5 and touches, but does not cross, vein R_{4+5}. **striatella** v. d. W.

Rhagoletis juniperinus Marc. Fig. 19.

My specimens are from Six Mile Creek, Ithaca, New York, where Mr. Marcovitch found the larvæ living in the berries of *Juniperinus virginianus.*

Rhagoletis cingulata Lw. Fig. 22.

Although my specimens are all taken in New York, this species is also reported from the Middle States, New Jersey and Massachusetts. The larvæ live in cherries and do considerable damage in some localities.

Rhagoletis tabellaria Fitch. Fig. 21.

The specimens are from Hamburg, New York, Washington and Nebraska and it has been taken in Canada. The Washington specimen was taken on Western Tall Blueberry.

Rhagoletis suavis Lw. Fig. 24.

I have material from Plummer's Id., Maryland, and from New York. In some regions this species does much damage to Black Walnuts, the larvæ living in the outer husks of the fruits.

Rhagoletis pomonella Walsh. Fig. 25.

This species is rather widely distributed over the northeastern states, occurring in South Dakota, North Dakota, Michigan, Illinois, New Jersey, New York, Massachusetts, Maine and Nova Scotia. The young live in fruit of apple, Cratægus, blueberry and cranberry.

Rhagoletis fausta O. S. Fig. 26.

My specimens are taken in New York but it is reported from New Hampshire and British Columbia where the larvæ do considerable damage to cherries.

Rhagoletis striatella v. d. W. Fig. 27.

Mr. C. W. Johnson writes me that he has one specimen from Illinois but the species was described from Mexican material.

Genus **PROCECIDOCHARES** Hendel. 1914.

(= *Œdaspis* Lw.)

Genotype, *Procecidochares atra* Lw.

Most of the species of this genus are shining black, although *P. penelope* O. S. is of a shining yellow and brown color instead, and pretty generally covered with white or yellowish stubble-shaped pile. The scutellum is always black, shining, greatly swollen, and bears four bristles. The wings are hyaline with heavy brown or black crossbands or rivulets. The cross-veins are greatly approximated and vein R_{4+5} is bare.

KEY TO THE SPECIES.

A. The lower fronto-orbital bristles are set well back from the eye, almost the width of the third antennal joint from its margin. The front is broad, generally over twice the width of one eye and is very pale yellow or white. The front, face, genæ, and cephalic region are densely covered with white stubble-shaped pile. The femora are yellow or very pale brown. ..... **polita** Lw.

AA. The lower fronto-orbitals are very close to the eye. The front is conspicuously narrower.

B. The basal black spot of the wing does not extend proximad of the

humeral cross-vein. The third crossband is definitely connected on the anterior margin with those forming an inverted V with its apex in the stigma. A shadowy, triangular spot in the hyaline of cell Cu_1 is quite characteristic. The cross-veins are neither curved nor parallel. ..... **penelope** O. S.

BB. The basal spot covers the humeral cross-vein and extends as far proximad as distad of it. The third black band is not connected with the inverted V.

C. The cross-veins are straight and parallel. The femora are black and the rest of the feet and legs yellow. There are three pairs of dorso-centrals, the anterior placed before the suture but not laterally situated as are the presuturals. The wing pattern resembles that of *P. atra*..... **setigera** Coq.

CC. One or both of the cross-veins are curved and they are not parallel. Two pairs of dorso-centrals..... **atra** Lw.

I can find no constant character by which to separate *P. atra* and *P. anthracina*. My eleven specimens vary so much in structural characters that I hesitate to use color separations. The legs of *P. atra* have dark brown or black femora with the rest of the legs and feet yellow, except a darker spot on the tip of the tarsus. *P. anthracina* seems to have lighter legs and no dark tarsal tip. The two wings of one specimen vary as regards exact position and direction of many veins. The bristles on the head and thorax are not constant, the lower fronto-orbitals varying from two to four pairs. The lower pair of the superior fronto-orbitals is not infrequently replaced by a cluster of two or three and the scutellum itself, in one instance, bears six bristles. Several of my specimens of *Procecidochares* possess the supernumerary cross-vein which Loew mentions in his description of *T. gibba,* and I feel certain that the whole group is irregular and that his *T. gibba* is a freak of *P. polita* Lw.

Procecidochares polita Lw. Fig. 28.

I have several specimens from Pennsylvania, Kansas and Georgia. It has, however, a rather wide eastern distribution, being reported from Mississippi, New York, Connecticut, New Jersey and from the District of Columbia. This species forms the Leafy Rosette Gall of the Goldenrod (*Solidago altissima*).

Procecidochares penelope O. S. Fig. 29.

The single specimen was taken at Manlius, New York.

Procecidochares setigera Coq. Fig. 30.

My one specimen, loaned by the U. S. Nat. Mus., was without a locality label. It is recorded from Rhode Island, Virginia, Georgia, Missouri and Kansas.

Procecidochares atra Lw. Fig. 31.

= *Procecidochares anthracina* Doane.

This species was taken in New York, Georgia and Nova Scotia.

Genus **TERELLIA** R. D. 1830.

(= *Trypeta* Lw.)

Genotype, *Terellia serratulæ* Linn.

These flies have very peculiarly shaped heads, which are more or less globular, puffed and rounded out in all directions. The lower fronto-orbitals are black and strong, the third pair from the antenna always being long enough to cross in the centre of the front, and this seems to be the characteristic position. They are quite heavy bodied flies, the head being wider than the thorax. The flattened scutellum bears four bristles. The wing is hyaline with a yellowish or grayish pattern of bands which are sometimes interrupted. The cross-veins are approximate and vein R_{4+5} is bare. The picture touches or covers the tip of vein M_{1+2}.

KEY TO THE SPECIES.

A. Picture of the wings with a band margining the apex and covering the apices of veins R_{2+3}, R_{4+5}, and M_{1+2}. The yellow scutellum has dark lateral spots. A dark band extends from the anal cell region along vein Cu_1 to or almost to the *m* cross-vein. . . . . **palposa** Lw.

AA. No apical band as described above.

B. The wing is clear from base as far distad as the stigma. A yellow species with yellow or pale brown bristles. The picture on the wing is pale or scattered, almost reticular. The wing is more or less milky and the abdominal segments are unicolorous. . . **vernoniæ** Lw.

BB. Basal region of the wing not clear as far as the stigma. This is a yellowish-gray species, much darker than the preceding, with a black ground color, covered with a yellowish-white pollen. The abdomen has four rows of black spots. Wings bear four dark-grey spots surrounded by clear hyaline spaces and with shadowy markings variously distributed. . . . . **florescentiæ** Linn.

Terellia palposa Lw. Fig. 32.

My specimens are from Ohio but it is recorded from Wisconsin, Minnesota, Iowa, Massachusetts and Kansas. Mr. Johnson reports,

"Common on thistle, *Cnicus pumilus,* at Hyannis Port, Mass., July 4, 1904."

Terellia vernoniæ Lw. Fig. 33.

I have a single specimen from North Carolina. It has been recorded from Pennsylvania and New Jersey, the adult being taken on *Vernonia.*

Terellia florescentiæ Linn. Fig. 34.
= *Terellia ruficauda* Lw.

The many specimens in this collection were collected in Nova Scotia and New York. It is reported from Canada, Maine and Massachusetts. Several adults emerged in captivity in November from infested thistle heads.

Genus **NEASPILOTA** O. S. 1878.
(= *Aspilota* Lw.)

Genotype, *Neaspilota alba* Lw.

The species of this genus are small flies whose bodies are covered with fine white or yellow pile. The head is generally about the same width as the thorax. The bristles of the head are weak, particularly the lower fronto-orbitals, the third pair from the antennæ never long enough to cross in the centre of the front. The thoracic dorsum usually has a dark pattern covered by the pollen and the yellow scutellum bears four bristles. The wings are without pattern or nearly so and are milky white. The cross-veins are approximate and vein R_{4+5} is bare.

KEY TO THE SPECIES.

A. Wings are entirely clear, including the stigma. The body is a very pale yellow and covered with white pile. The veins of the wing are not dark colored. ..... **alba** Lw.

AA. The wings are not entirely clear, the stigma at least being colored.

B. The stigma only is brown while the rest of the wing is clear. The body is grey, covered with white pile. The veins of the wing are colored brown. ..... **albidipennis** Lw.

BB. The wing has a black spot through the stigma and also various dark spots on the apical half. These are arranged more or less in the form of interrupted bands. ..... **achilliæ** John.

Neaspilota alba Lw. Fig. 35.

I have specimens from New York and Texas. It has been taken in Pennsylvania, New Jersey, Missouri and Colorado. The adults were

captured on Iron weed (*Vernonia noveboracensis*) and bred by Riley from the seeds of *Vernonia*.

Neaspilota albidipennis Lw. Fig. 36.

My specimens are from Pennsylvania and Massachusetts. In New Jersey, the adults were taken on *Vernonia*.

Neaspilota achilliæ John. Fig. 37.

I have only two specimens, both from Wood's Hole, Massachusetts. It is reported from Pennsylvania and Georgia and the adults have been taken on Yarrow (*Achillea millefolium*).

Genus **ACROTÆNIA** Lw. 1873.

Genotype, *Acrotænia latipennis* Wd.

Genus **XANTHOMYIA** new genus.

Genotype, *Xanthomyia platyptera* Lw.

The wing is reticulate, very broad, more than half as wide as long, with a strongly convex margin. It is dark gray, almost black at times and with innumerable hyaline droplets throughout. Cross-veins are approximate, perpendicular and parallel. The scutellum bears four bristles.

Xanthomyia platyptera Lw. Fig. 38.

This is a gray species with yellow legs and head. A black transverse streak occurs on the border of the eye and the bristles of the front are inserted each in a dark puncture. The thorax is gray pollinose and the black bristles likewise inserted on black spots. The scutellum is variegated brown and yellow, while the abdomen bears four rows of black spots. The wings are reticulate, the stigma black with two hyaline spots. The entire margin of the wing has a more or less continuous row of hyaline spots separated by bands of the dark running to the margin.

All my specimens were taken in New York but it is recorded also from Connecticut.

Genus **EUTRETA** Lw. 1873.

Genotype, *Eutreta sparsa* Lw.

These dark-brown flies are stout with large and broad brown wings. The front is wide and has the usual number of bristles, which are

rather stout and black. The postocular row is composed of short black bristles and somewhat longer white stubble-shaped bristles interspersed. The black scutellum has four black bristles. The wings are a dense, dark-brown color with a narrow white crescent-shaped tip, the brown being minutely punctured with yellowish-white spots.

KEY TO THE SPECIES.

A. Vein R_{4+5} is bristly. The stigma is without any yellow punctures but there is a small marginal patch of yellow around the apex of vein R_1. The face is very pale with several black spots; the body brown. **sparsa** Wied.

AA. Vein R_{4+5} is not bristly and the face is without black spots.

B. The apical white crescent of the wing is divided into several sections by spurs of the brown coloring. The stigma has one or two yellow punctures. The body is brown, and somewhat smaller than *sparsa*. ..... **rotundipennis** Lw.

BB. The white crescent is complete and the stigma without yellow punctures. There is no marginal yellow patch at the tip of vein R_1. The thorax and legs are shining black, the former with white pile. The abdomen is bright reddish brown. ..... **diana** O. S.

Eutreta sparsa Wied. Fig. 39.

The specimens are from New York and Nova Scotia and it is reported from Massachusetts, Maine, New Jersey, Pennsylvania, Indiana, Wisconsin, South Dakota, Colorado, California, Washington and Texas. The larvæ live in root galls on goldenrod.

Eutreta rotundipennis Lw. Fig. 43.

A single specimen from Plummer's Island, Maryland, was loaned by Mr. R. C. Shannon. It has also been reported from New Jersey. Mr. C. W. Johnson writes me that Loew's type was from Texas rather than "Middle States" as recorded in his Monograph.

Eutreta diana O. S. Fig. 41.

I have one specimen from Montana and one from California. It has been taken in Missouri, Nevada, Nebraska and Washington. The larvæ live in galls on *Artemisia tridentata*.

Genus **PARACANTHA** Lw. 1873.

(= *Carpotricha* Lw.)

Genotype, *Paracantha culta* Lw.

The adults are robust, pale brown flies with white hairs. The body is variously spotted with dark brown or black, especially at the

insertion of the bristles. The face and front have several black spots and flecks. The two pairs of lower orbital bristles, the ocellars and the two pairs of vertical bristles are all black and, with the exception of the outer vertical pair, are all stout. A postocular row of small black bristles is intermixed with white ones. All others of the front and occiput are white and weak. The yellow scutellum is covered with white stubble-shaped pile and bears four black spots for the insertion of the bristles. The wing is large, light brown in color and rayed at the margin from the base along the anterior margin to the tip of vein Cu_1. A prominent black eye-spot appears in cell R_5. Vein R_{4+5} has two or three weak bristles on the upper side of the wing but is distinctly bristly on the lower side.

Paracantha culta Wied. Fig. 42.

My specimens are from New Mexico, Georgia, Nebraska, Colorado and Texas. It has also been reported from Washington, Oregon, Idaho, South Dakota, California, Kansas and Carolina.

Paracantha marginepunctata Macq.

This was described from material recorded from Baltimore; but with a very meagre description.

Genus **ACIDOGONA** Lw. 1873.

Genotype, *Acidogona melanura* Lw.

Loew points out that the characteristics of this genus are found in "the striking breadth of the forehead, the unusual length of the antennæ, and the comparatively very even face, somewhat retreating below."

Acidogona melanura Lw. Fig. 40.

This species is clay-yellow with reticulate wings. The yellow scutellum has four bristles and vein R_{4+5} is distinctly bristly. Loew described the species from material taken in the District of Columbia and I have copied his figure of the wing to include with my figures as I have no specimens, nor any other records of its capture.

Genus **EUROSTA** Lw. 1873.

Genotype, *Eurosta solidaginis* Fitch.

In this genus are found the largest and heaviest of our eastern Trypetidæ. They have reddish-brown bodies and dark reticulate

wings that are more or less finely punctured with yellow and have varying amounts of hyaline on the margins. The front is very broad, three or four times as broad as one eye; cheeks also broad. The dark scutellum has either two or four bristles, while the ovipositor is heavy and conical. The wings are broad with a very obtuse tip and vein R_{4+5} with bristles.

KEY TO THE SPECIES.

A. Scutellum with two bristles.

B. Conspicuous hyaline indentations are present on the margin of cell $2dM_2$, some of which are as deep as the *r-m* cross-vein.

C. There is a large and black elongated spot in cell R_5 which fills two thirds of that cell. The margin of the wing is rayed from considerably before the stigma, around the apex to the tip of vein Cu_1. There is no single large hyaline triangle occupying the most of cell Cu_1 and extending up into the discal cell. **latifrons** Lw.

CC. No large and dark elongated spot in cell R_5. The margin of the wing may be considered as rayed only at the extreme tip, if at all. A large hyaline triangle is present, margining cell Cu_1 and occupying at least two thirds of that cell, and extending up into the discal cell. ..... **solidaginis** Fitch.

BB. All marginal indentations in the second M_2 cell are minute.

C. A triangular hyaline spot on the anterior margin just beyond the stigma. The dark comma mark in the centre of this indentation which is present in the next species is absent here. The ovipositor is more or less attenuated near the apex and finely ridged transversely. The wing is pretty uniformly dark brown with numerous yellow punctures. A very narrow white crescent edges the extreme tip and there is a suggestion of a white marginal indentation at the apex of vein Cu_2. ..... **elsa** Daecke.

CC. The white hyaline triangular indentation just beyond the stigma has a dark comma mark through it, running from the margin to vein R_{2+3}. The ovipositor is smooth and uniformly conical. This species has a small hyaline indentation over the tip of vein Cu_2 and also a narrow white crescent on apex. **comma** Wied.

AA. Scutellum with four bristles.

B. The *r-m* cross-vein is oblique and the stigma has two spots, one yellowish and the other white. Several hyaline spots are more or less rayed about the apex, with a suggestion of a dark spot in cell R_5 which shows only in certain lights. The body is somewhat smaller than that of the following species. ..... **conspurcata** Doane.

BB. The *r-m* cross-vein is perpendicular, but this species also has two spots in the stigma. The hyaline spots and spaces are smaller than in *conspurcata* and the small yellow punctures are more numerous. **reticulata** Snow.

Eurosta latifrons Lw. Fig. 44.

Two specimens were loaned by Mr. C. W. Johnson, one from St. Albans, Vermont, and one from Springfield, Massachusetts. It is reported from Carolina, Connecticut and New Jersey.

Eurosta solidaginis Fitch. Fig. 45.

I have many specimens from New York and Ohio. It has, however, a rather wide distribution, being reported from Maine, Connecticut, New Hampshire, New Jersey, Kansas, Minnesota, Nebraska, Idaho, Colorado, Washington and Canada. The larvæ live in the round galls of the goldenrod.

Eurosta elsa Daecke. Fig. 46.

My specimens are from Ithaca, Long Island, and Forest Hills, New York, and the species is recorded from Maryland. The larvæ live in root galls of the goldenrod (*Solidago rugosa*).

Eurosta comma Wied. Fig. 47.

This species is represented by specimens from Colorado, New York and Maine but occurs also in New Jersey, Connecticut, Maryland, Virginia, Kentucky and Washington. Like *elsa* this species also forms root galls on goldenrod but chooses a different species for its host (*Solidago juncea*).

Eurosta conspurcata Doane.

I have specimens from Ithaca and Rock City, New York, and it is reported from New Jersey, New Hampshire and Washington.

Eurosta reticulata Snow. Fig. 48.

Dr. A. L. Melander very kindly loaned me a specimen of this species and I have also one from New York State. It has been taken in Massachusetts, Connecticut, Minnesota, South Dakota, Montana and Colorado.

Genus **ICTERICA** Lw. 1873.

Genotype, *Icterica seriata* Lw.

The whole insect, body and wings is a yellowish-brown. The anterior pair of dorso-central bristles is in a line with the anterior pair of supra-alars. The yellow scutellum bears four bristles. The wings are long with more or less parallel margins. The anterior cross-vein is somewhat oblique, that end which touches vein R_{4+5} being furthest

from the base of the wing, while the *m* cross-vein is even more oblique than the *r-m* cross-vein. Vein R_{4+5} may either be bristly or not. Our eastern species have the same general pattern of many yellow droplets on a pale brown background. A brown band margins the wing and most of the breaks and spots in it are of pure hyaline.

KEY TO THE SPECIES.

A. Vein R_{4+5} is bristly for over two thirds of its length; while the dark brown or black of the anterior margin begins before the tip of the subcostal vein. This border has no hyaline interruptions between the stigma and the tip of vein M_{1+2}, although it may have two or three small yellow ones. The brown network of the centre of the wing is in the form of angular spots, triangles, squares, etc. ..... **seriata** Lw.

AA. Vein R_{4+5} with only two or three bristles at the base. The dark brown of the anterior margin begins beyond the tip of the subcostal vein and has four hyaline interruptions between the stigma and the tip of vein R_{4+5}. The brown net-work of the centre of the wing is in the form of circles and connections between round spots. ..... **circinata** Lw.

Icterica seriata Lw. Fig. 49.

Three specimens are from Ithaca, New York, and it is recorded from Massachusetts, New Jersey, Illinois, Michigan and Nebraska.

Icterica circinata Lw. Fig. 50.

My representatives are from Trenton and Westville, New Jersey. It has been taken in New York. Mr. C. W. Johnson reports taking it "quite commonly on the flower heads of a wild sunflower-like plant that grew between high and low tidewater."

Genus **EUARESTA** Lw. 1873.

Genotype, *Euaresta festiva* Lw.

The species of this genus all have reticulate wings whose reticulation extends well over two thirds of the wing. The picture is rayed at the apex, invariably having a large hyaline spot on the margin of cell R_5. The scutellum bears four bristles. Vein R_{4+5} is sometimes sparingly bristly, although after examining a long series of several species, I doubt if this character is a constant one in the different members of the genus. These differ from those of the genus *Trypanea* in the shape of the body and particularly in the shape of the abdomen. In *Euaresta* it is heavy and robust, comparatively, and it

is usually wider than the thorax. In the male the abdomen is shorter than the thorax and in the female, sometimes shorter but sometimes as long as the thorax.

KEY TO THE SPECIES.

A. The stigma is dark with one or two hyaline or yellow spots.

B. Cell R_5 has a darker, almost black elongate spot in the brown of the reticulation.

C. Cell R_5 has a conspicuous hyaline spot above the tip of the *m* cross-vein. The body of the female is 4–5 mm. long, entirely yellow with the exception of the long and tapering black or reddish ovipositor. The wings are hyaline with brown reticulation which is much darker in cells R_1 and R_{2+3}. ..... **festiva** Lw.

CC. Cell R_5 has no hyaline spot except the marginal indentations. The body of the female is about 2.5 mm. long. The thorax and head are both gray pollinose while the abdomen is light brown with dark brown posterior edges to the segments and a dark ovipositor. The legs are yellow and the wings quite similar to the preceding with the exceptions already noted. ..... **bella** Lw.

BB. Cell R_5 has no dark elongate spot in the brown of the reticulation. The body is entirely yellow and about 5–6 mm. long in the female. The ovipositor varies from yellow to reddish-brown. The wings are hyaline with a yellow reticulation which becomes somewhat darker, almost black on the costal border and apex. The hyaline drops are very numerous and exceptionally large. ..... **æqualis** Lw.

AA. The stigma is wholly dark like the ground color of the wing, that is, without any hyaline spots.

B. The costal cell is clear hyaline without any dark spots.

C. A very small, grey pollinose species, with hyaline wings bearing a black pattern. Female 3 mm. long. The wing reticulation differs in having many more small hyaline spots than the next species, especially in cell R_5 where there are eight of various sizes among my specimens. ..... **angustipennis** Lw.

CC. This species is much larger (female 5 mm.) and yellow. The wings are hyaline with the pattern in yellow or light brown. Cell R_5 has at most four hyaline spots. ..... **subpura** John.

BB. The costal cell has several dark spots breaking the clear hyaline.

C. Cell R_5 has a single conspicuous spot immediately above the posterior cross-vein, as well as a few others scattered throughout the cell. There is also a minute hyaline spot in cell R_1 beyond the hyaline pyramid. Body 5 mm. long, black, with the head and legs brown. The wings are somewhat milky with black reticulations. ..... **pura** Lw.

CC. Cell R_5 has two conspicuous spots, one above the *m* cross-vein and

the other directly above the first. Cell R_1 is entirely dark beyond the hyaline pyramid. ..... **webbii** Doane.

Euaresta festiva Lw. Fig. 51.

I have specimens from Ithaca, New York, and Fremont, Nebraska. It is recorded from Pennsylvania, Connecticut, New Jersey, Virginia, Illinois, Ohio, Quebec and South Dakota.

Euaresta bella Lw. Fig. 52.

My material was taken in New York, Nebraska, Illinois and Georgia but it is reported from New Jersey, Iowa, Kansas, Michigan, Tennessee, Wisconsin and Washington. The adults are commonly taken on Ragweed.

Euaresta æqualis Lw. Fig. 53.

This species is rather widely distributed since I have specimens from New York, Maryland, Indiana, Nebraska and Washington and records from Virginia, District of Columbia, Pennsylvania, Iowa, Illinois, Ohio, Kansas, Idaho, Colorado, California and New Mexico. It has been reared from cockleburr seed (*Xanthium*).

Euaresta angustipennis Lw.
= *Tephritis angustipennis* Lw.

My specimens are from Ottawa, Canada, Nova Scotia, New York and Washington and it has been taken in New Jersey and Alaska.

Euaresta subpura John. Fig. 55.

I have specimens from Anglesea, New Jersey, but it is recorded from Wildwood, New Jersey, on Sea burweed (*Xanthium echinatum*).

Euaresta pura Lw. Fig. 56.

Specimens from Massachusetts and New York.

Euaresta webbii Doane. Fig. 57.

I have one specimen from Dr. A. L. Melander and reports of its capture in Minnesota and Idaho.

Genus **TRYPANEA** Schrank. 1796.

(= *Urellia* Lw.)

Genotype, *Trypanea stellata.*

These are dark gray flies, more or less densely covered with white pollen, whose bodies are quite slender as compared with the species of *Euaresta.* The abdomen is generally longer than the thorax, and

usually not as wide. The wings are hyaline with a black star-shaped pattern on the apex. Occasionally the hyaline of the wing has a shadowy reticulation. The scutellum has either two or four bristles. Vein R_{4+5} is sometimes bristly, and the cross-veins are approximate and perpendicular, while the *m* cross-vein is slightly curved.

KEY TO THE SPECIES.

A. Wing without a pale shadowy reticulation besides the dark stellar spot. The scutellum has two long bristles.

B. The black spot has eight rays, seven of which reach the margin of the wing. Two hyaline spots are present in the black spot, one at the tip of vein R_{2+3} and the other in cell R_5, touching vein M_{1+2} and situated between the cross-veins. The female is 3 mm. long. **daphne** Wied.

BB. The dark star has nine rays, eight of which reach the margin. There are two hyaline spots in approximately the same positions as in the preceding. Female 4.5 mm. ..... **dacetoptera** new species.

AA. The wing has a pale reticulation over the whole, and with a black stellar spot on the apical half. The scutellum has four bristles. **abstersa** Lw.

Trypanea daphne Wied. Fig. 58.

= *Trypanea mevarna* Walk.

= *Trypanea solaris* Loew.

I have specimens from Nebraska and California but reports of its capture in Massachusetts, Rhode Island and Georgia.

Trypanea abstersa Lw. Fig. 60.

This collection contains representatives from New York, Oregon and Nebraska. It is reported from Cuba, New Mexico, South Dakota, Iowa, Minnesota and Massachusetts.

Trypanea dacetoptera new species. Fig. 59.

A dark pollinose species, with yellow legs and the whole body thickly covered with white hair. Front comparatively broad, one and one half times as wide as one eye, bristles brown. Scutellum gray pollinose with two long yellowish-brown bristles. Abdomen longer than thorax. Ovipositor shining black, flattened, about as long as last two abdominal segments. Wings hyaline with a large stellate spot on the apical half which sends off nine rays of approximately the same width, eight of which reach the margin. The first reaches the margin through the stigma; a second extends to the anterior margin a little beyond the stigma; a third and fourth at the tips of veins R_{4+5} and M_{1+2} respectively; the fifth and sixth through cell $2dM_2$; the seventh covers the *m* cross-vein and the eighth runs more or less parallel to

the seventh, touching the margin in cell Cu_1. The ninth arises in the vicinity of the *r-m* cross-vein and extends half way across the discal cell. There is a light streak in cell R_5 which margins the *r-m* cross-vein. Besides this, the dark spot encloses two hyaline drops, one at the tip of R_{2+3} and the other in cell R_5, touching vein M_{1+2} and situated between the two cross-veins. Vein R_{4+5} is bare. Female is 4.5 mm., male 4 mm. long. One female was taken June 6, 1916, at Karner, New York, by W. T. M. Forbes and the two males are from Rock City, New York, June 10, 1915. Type in Cornell University collection.

Genus **ENSINA** Lw. 1830.

Genotype, *Ensina sonchii* Linn.

The proboscis is geniculated, as long as the head, and with flaps that are much produced, reaching backwards as far as the mentum. The oral edge is strongly produced and there is no stellate edge to the reticulation of the wings.

Ensina picciola Bigot. Fig. 61.
(= *Ensina humilis* Lw.)

This is a small gray pollinose species, the female only 2 mm. long. The long geniculated proboscis is its remarkable feature. The scutellum bears two exceedingly long black bristles. The abdomen has two rows of black spots on the dorsum and the hyaline wings have a coarse and diffuse reticulation. The stigma is wholly black. One of my specimens has an extra spur in the middle of the *m* cross-vein. The material is all from Florida, though I have reports of its being taken in Bermuda, Jamaica, Cuba, Tennessee, Mississippi, Kansas, Illinois, Iowa, South Dakota and Colorado.

Genus **EURIBIA** Hendel. 1912.

(= *Tephritis* Lw.)

Genotype, *Euribia arnicæ* Linn.

Although the species of this genus always have reticulate wings, this reticulation is never stellate. The oral opening is projecting and the proboscis is short-geniculate. The yellow scutellum bears four bristles.

KEY TO THE SPECIES.

A. The reticulation of the wing is made up, partly of yellow and partly of black, the latter being more or less confined to the stigma (a spot at the end of the subcostal vein and another at the end of vein R_1) and in the region of the apex of vein R_{2+3}. The body is yellow, somewhat gray pollinose and with a yellow ovipositor. Vein R_{4+5} is bristly.
fucata Fabr.

AA. The reticulation of the wing is dark brown and black and without any yellow.

B. Vein R_{4+5} is bristly. This is a gray insect with pale yellow scutellum. The wings are large and mostly dark brown with minute hyaline spots. The base of the wing is hyaline and there is a conspicuous hyaline triangle beyond the stigma. ..... **geminata** Lw.

BB. Vein R_{4+5} is not bristly.

C. The apex of the wing has few spots but has a round marginal one in cell R_5, two in cell R_3 and three in second M_2. The reticulation leaves the extreme base hyaline but covers the rest of the wing with many round hyaline spots of various sizes. The black stigma has a hyaline spot. The face is white or pale yellow. **albiceps** Lw.

CC. No row of marginal spots around the apex as in the preceding. The body is gray with yellow feet. The wings have a coarse and diffuse reticulation. There is a row of black spots across the wing in the region of the base of cell R_3 which forms an indistinct and interrupted band. Otherwise, the wing is practically clear hyaline up to the region of the stigma and *r-m* crossvein. ..... **clathrata** Lw.

Euribia fucata Fabr. Fig. 65.

= *Tephritis picturata* Snow.

I have specimens from New Jersey and Jamaica and it is also recorded from Florida.

Euribia geminata Lw. Fig. 62.

Messrs. E. T. Cresson and C. W. Johnson loaned me material taken in New Jersey and Pennsylvania.

Euribia albiceps Lw. Fig. 63.

After examining seventy-five specimens, I can find no character upon which Loew could establish a good species, *euryptera.* The shape and width of the wing varies greatly and so does the size and proximity of the six hyaline spots which make up the pyramid beyond the stigma. There is also great variation in the number of small spots in the region of the stigma and the pyramid. There seems to be no constancy, however, in the relationships of these variations with each other, so that for as many times as one could pick out a specimen of *euryptera* (with broad wings, small hyaline spots making up the pyramid with considerable space between, and with spots less numerous in the vicinity of the stigma), one could pick out specimens of half a

dozen other species. The wing I have figured would more nearly represent Loew's *euryptera* and shows something of the variation from his *albiceps*. My specimens were collected in New York and Nova Scotia, but the species has been reported from Maine and New Jersey. *T. euryptera* Lw. was described from a single specimen taken at West Point, New York.

Euribia clathrata Lw. Fig. 64.

The collection contains an excellent series from Washington and Utah. It is recorded from the Middle States and New Jersey.

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EXPLANATION OF PLATES XVIII, XIX.

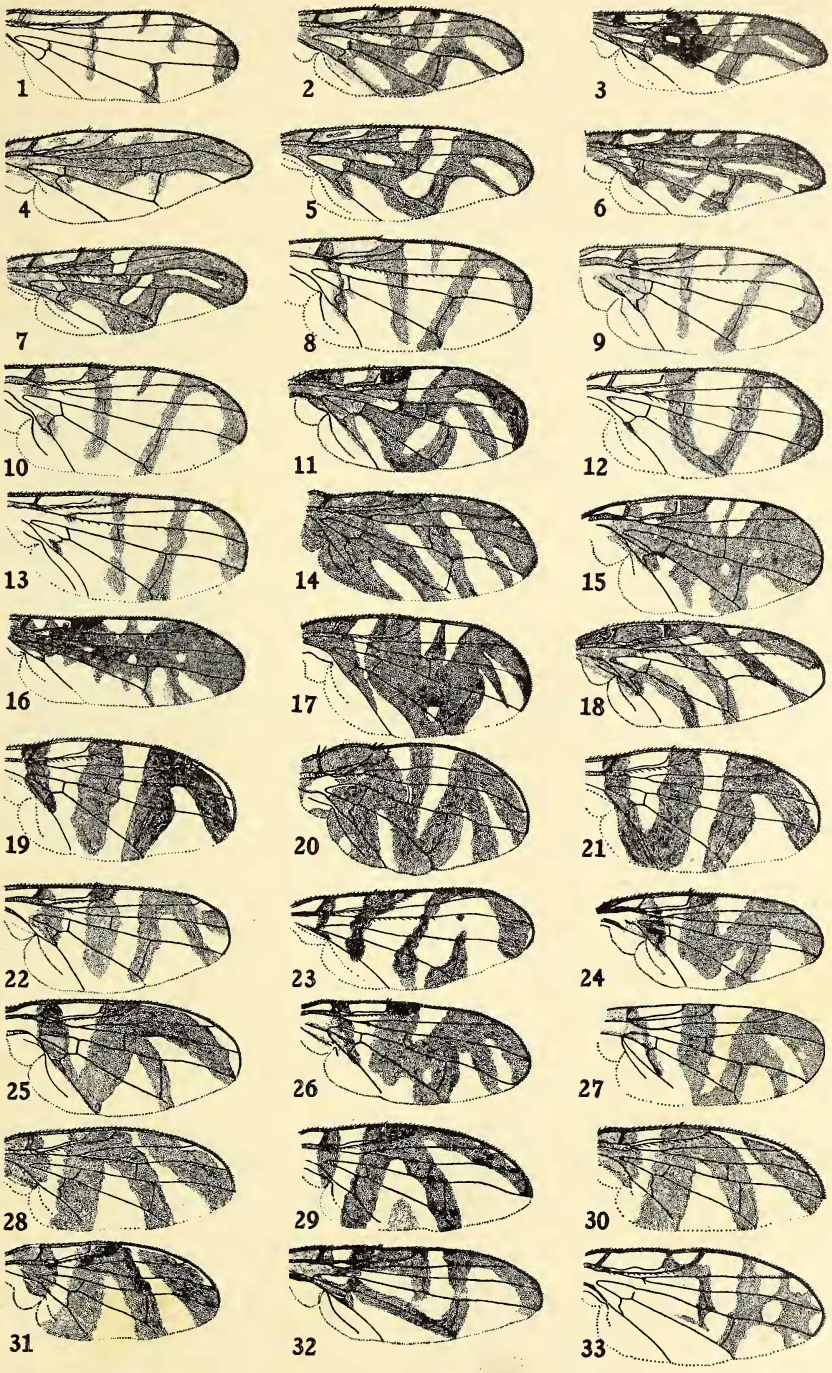
PLATE XVIII.

FIG. 1. *Aleomyia alpha* n. sp.
FIG. 2. *Straussia longipennis* Wied. var. *perfecta* Lw.
FIG. 3. *Straussia longipennis* Wied. var. *typica* Lw.
FIG. 4. *Straussia longipennis* Wied. var. *longitudinalis* Lw.
FIG. 5. *Straussia longipennis* Wied. var. *vittigera* Lw.
FIG. 6. *Straussia longipennis* Wied. var. *intermedia* Lw.
FIG. 7. *Straussia longipennis* Wied. var. *arculata* Lw.
FIG. 8. *Zonosema electa* Say.
FIG. 9. *Zonosema flavonotata* Macq.
FIG. 10. *Zonosema setosa* Doane.
FIG. 11. *Acidia fratria* Lw.
FIG. 12. *Acidia sigma* n. sp.
FIG. 13. *Phorellia tortilis* Coq.
FIG. 14. *Peronyma sarcinata* Lw.
FIG. 15. *Aciura* (*Eucosmoptera*) *nigricornis* Doane.
FIG. 16. *Aciura* (*Eucosmoptera*) *tetraspina* n. sp.
FIG. 17. *Aciura* (*Eucosmoptera*) *limata* Coq.

FIG. 18. *Tomoplagia obliqua* Say.
FIG. 19. *Rhagoletis juniperinus* Marc.
FIG. 20. *Stenopa vulnerata* Lw.
FIG. 21. *Rhagoletis tabellaria* Fitch.
FIG. 22. *Rhagoletis cingulata* Lw.
FIG. 23. *Epochra canadensis* Lw.
FIG. 24. *Rhagoletis suavis* Lw.
FIG. 25. *Rhagoletis pomonella* Walsh.
FIG. 26. *Rhagoletis fausta* O. S.
FIG. 27. *Rhagoletis striatella* v. d. W. (after van der Wulp).
FIG. 28. *Procecidochares polita* Lw.
FIG. 29. *Procecidochares penelope* O. S.
FIG. 30. *Procecidochares setigera* Coq.
FIG. 31. *Procecidochares atra* Lw.
FIG. 32. *Terellia palposa* Lw.
FIG. 33. *Terellia vernoniæ* Lw.

PLATE XIX.

FIG. 34. *Terellia florescentiæ* Linn.
FIG. 35. *Neaspilota alba* Lw.
FIG. 36. *Neaspilota albidipennis* Lw.
FIG. 37. *Neaspilota achilliæ* John.
FIG. 38. *Xanthomyia platyptera* Lw.
FIG. 39. *Eutreta sparsa* Wied.
FIG. 40. *Acidogona melanura* Lw.
FIG. 41. *Eutreta diana* O. S.
FIG. 42. *Paracantha culta* Wied.
FIG. 43. *Eutreta rotundipennis* Lw.
FIG. 44. *Eurosta latifrons* Lw.
FIG. 45. *Eurosta solidaginis* Fitch.
FIG. 46. *Eurosta elsa* Daecke.
FIG. 47. *Eurosta comma* Wied.
FIG. 48. *Eurosta reticulata* Snow.
FIG. 49. *Icterica seriata* Lw.
FIG. 50. *Icterica circinata* Lw.
FIG. 51. *Euaresta festiva* Lw.
FIG. 52. *Euaresta bella* Lw.
FIG. 53. *Euaresta æqualis* Lw.
FIG. 54. *Euaresta angustipennis* Lw.
FIG. 55. *Euaresta subpura* John.
FIG. 56. *Euaresta pura* Lw.
FIG. 57. *Euaresta webbii* Doane.
FIG. 58. *Trypanea daphne* Wied.
FIG. 59. *Trypanea dacetoptera* n. sp.
FIG. 60. *Trypanea abstersa* Lw.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